

REMARKS

Claims 1-10 are currently pending in the application. Claims 2 and 5 are amended. The amendments find support in the specification and are discussed in the relevant sections below. No new matter is added.

Claim Objections

The Office Action states that “[c]laims 1 and 5 are objected to for reciting ‘R. reniformis.’” These objections should be rendered moot by the amendment of claims 1 and 5.

Rejection of Claims 2-4 and 6-10 Under 35 U.S.C. § 112, Second Paragraph

The Office Action states that “[c]laims 2-4 and 6-10 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.” The Office Action states that “[c]laims 2-4 and 6-10 are indefinite because the claim is dependent from itself or a non-existing claim.” The Office Action states that “[c]laims 7-8 are included in the rejection because they are dependent on a rejected claim and do not correct the deficiency of the claim from which they [depend]”.

Applicants have amended the claims to place them in proper dependant form. In view of the amended claims, the rejection under § 112, second paragraph should be overcome and Applicants, therefore, request that the rejection be withdrawn.

Rejection of Claims 1 and 3-5 Under 35 U.S.C. 103(a)

The Office Action states that “[c]laims 1 and 3-5 are rejected under § 103(a) as being unpatentable over Zolotukhin et al., in view of Bryan et al.” Applicants respectfully disagree and traverse the rejection. The Office Action states that “Zolotukhin et al. disclose humanized green fluorescent protein (GFP) genes adapted for expression in mammalian and human cells, and the humanized GFP genes are prepared by incorporating codons preferred for use in human

genes into the DNA sequence, humanized GFP expression constructs, and methods of making and using such genes, where the humanized genes are preferably humanized versions adapted from the A. Victoria GFP gene, but other GFP gene sources are not excluded.” The Office Action states that “Zolotukhin et al. teach that the GFP from *Acquorea* and that of the sea pansy *Renilla reniformis* share the same chromophore, where *Renilla* GFP has a single absorbance peak at 498 nm with about 5.5 fold greater monomer extinction coefficient than the major 395 nm peak of the *Acquorea* GFP.” The Office Action states that “Zolotukhin et al. do not disclose the polynucleotide sequence encoding *R. reniformis* GFP.”

The Office Action states that “Bryan et al. teach a nucleic acid molecule encoding a *Renilla* GFP, e.g., *Renilla mulleri* GFP or *Renilla reniformis* GFP, and host cells including bacterial, yeast and mammalian host cells, and plasmids for expression of the nucleic acids encoding each luciferase and GFP and combinations of luciferases and GFPs, where *Renilla* GFP refers to GFPs from the genus *Renilla* and to mutants and variants thereof.” The Office Action states that “Bryan et al. also teaches a method for recombinant production of a *Renilla* GFP in recombinant cells such as bacterial cells, plant cells and mammalian cells, e.g., human embryonic cells.” The Office Action concludes that “it would have been obvious that one of skill in the art is motivated to combine the two references to make and use a humanized polynucleotide which encodes *Renilla reniformis* GFP to produce *Renilla reniformis* GFP in mammalian cells with high expression as taught by Zolotukhin et al. and Bryan et al. because the spectrum of *Renilla* GFP would be preferable to that of *Acquorea* in many practical applications, since wavelength discrimination between different fluorophores and detection of resonance energy transfer are easier when the component spectra are tall and narrow rather than low and broad.”

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a) three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Second, there must be a reasonable expectation of success. *Id.* The teaching or suggestion to make the claimed combination and the reasonable expectation of

success must both be found in the prior art, and not based on Applicants' disclosure. *Id.* Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (*In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974)).

One of skill in the art would not have been motivated to combine the teachings of Zolotukhin et al. and Bryan et al., and even if combined, the teachings of Zolotukhin et al. and Bryan et al. fail to teach a humanized polynucleotide sequence encoding *R. reniformis* GFP of SEQ ID NO: 2.

Zolotukhin et al. teaches humanized green fluorescent protein (GFP) genes adapted from the *A. Victoria* gfp gene for expression in mammalian and human cells by incorporating codons preferred for use in human genes into the DNA sequence of the GFP genes. Zolotukhin et al. teaches "humanized gfp expression constructs and various methods of using the humanized genes and vectors."

As amended, the instant claims require that the humanized polynucleotide encode an *R. reniformis* GFP having the sequence of SEQ ID NO: 2. Zolotukhin et al. does not teach or suggest any polynucleotide sequence encoding *R. reniformis* GFP having the sequence of SEQ ID NO: 2.

Bryan et al. teaches "isolated nucleic acids that encode fluorescent proteins and nucleic acids that encode luciferases. Bryan et al. teaches nucleic acid molecules encoding GFPs from *Renilla* and from *Ptilosarcus* and more specifically nucleic acid molecules that encode the *Renilla mulleri* luciferase, a *Gaussia* species luciferase, and a *Pleuromamma* species luciferase." Similar to Zolotukhin et al., Bryan et al. does not teach or suggest an *R. reniformis* GFP of SEQ ID NO: 2. Bryan et al. does not teach or suggest a humanized polynucleotide, or any polynucleotide sequence encoding the *R. reniformis* GFP of SEQ ID NO: 2.

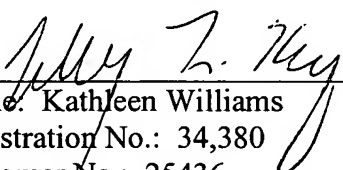
Thus, Bryan et al. and Zolotukhin et al. fail to teach a polynucleotide encoding SEQ ID NO: 2 or an *R. reniformis* GFP having the sequence of SEQ ID NO: 2. Thus, even if the teachings of Zolotukhin et al. are combined with the teachings of Bryan et al., the aggregate disclosures do not teach or suggest a humanized polynucleotide encoding *R. reniformis* GFP of

SEQ ID NO: 2. The instant claims are, thus non-obvious in view of Zolotukhin et al. and Bryan et al., whether considered alone or together, and Applicants accordingly request that the rejection be reconsidered and withdrawn.

Applicants submit that all claims are allowable as written and respectfully request early favorable action by the Examiner. If the Examiner believes that a telephone conversation with Applicant's attorney/agent would expedite prosecution of this application, the Examiner is cordially invited to call the undersigned attorney/agent of record.

Respectfully submitted,

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